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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,041	05/10/2001	Oh-Jin Kwon	KWON3003/WKP	4634

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EXAMINER

NAKHJAVAN, SHERVIN K

ART UNIT PAPER NUMBER

2621

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/852,041

Applicant(s)

KWON, OH-JIN

Examiner

Shervin Nakhjavan

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,3,4,6-9 and 11 is/are rejected.
- 7) ☒ Claim(s) 2,5 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 4, 6, 7 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Manjunath et al. (US 6,332,030).

Manjunath teaches limitation of claim 1, a method of embedding a hidden digital watermark into a produced image comprising the steps of: repeatedly extending the digital watermark in a symmetric form and adjusting the extended digital watermark in the same size as an image into which the digital watermark is embedded (Column 6, Line 57 through Column 7, Line 12, where each signature image coefficient being the digital watermark is expanded to the same size of the input image block i.e. 2x2 and the method is repeated for all coefficients of the signature image); decomposing the digital watermark image and the image into which the digital watermark is embedded into subbands (Column 6, Lines 40-43, subbands are generated from the wavelet transform as seen in figure 1, block 10); properly adjusting pixel values of the subband-decomposed digital watermark image in accordance with the subband decomposed image into which the digital watermark is embedded (Column 6, Lines 58-59, where the

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coefficients are linearly scaled to 24 bits representation and the same action is performed on the input image column 7, lines 1-2), and adding the pixel values of the subband decomposed digital watermark image to pixel values of the subband decomposed image into which the digital watermark is embedded (Column 7, Lines 5-7); and producing a final image into which the digital watermark is embedded by a subband synthesis (Column 7, Lines 19-24);

Manjunath teaches limitation of claim 3, the step of decomposing the image to a 2x2 subbands as discussed above with respect to the wavelet transformation where the decomposing could be continued to plurality of the levels as discussed in Column 8, Lines 34-37);

Manjunath teaches limitation of claim 4, the decomposing step is implemented by a low-pass filter and high-pass filter for filtering one-dimensional signals in the horizontal and vertical directions (Column 6, Lines 52-55, wherein low and high pass filtering of an image pixel is inherent in wavelet transformation in generating subbands i.e. LL, LH);

Manjunath teaches limitation of claim 6, the step of producing the final image into which the digital watermark is embedded performs the subband synthesis in the reverse order of the step of decomposing the digital watermark image and the image into which the digital watermark is embedded into subbands (Column 7, Lines 23-24);

Manjunath teaches limitation of claim 7, a method of embedding a hidden digital watermark into a produced image comprising the step of embedding the digital watermark in accordance with color types of the digital watermark image and the image

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into which the watermark image is embedded (Column 14, Lines 24-27, where a gray scale watermark image is embedded into a color image, also the principal of color embedding and its differences is discussed in column 14, lines 6-11, experimental results of embedding a grayscale watermark image into a grayscale image is also discussed in column 12, lines 52-54);

Manjunath teaches limitation of claim 9, in case that the digital watermark is black and white, and the image into which the watermark is embedded is color, the image into which the watermark is embedded is converted into a YUV form, and watermark is embedded into Y component (Column 14, Lines 24-27).

3. Claims 7, 8 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamaguchi (US 6,724,921).

Regarding claim 7, Yamaguchi teaches, a method of embedding a hidden digital watermark into a produced image comprising the step of embedding the digital watermark in accordance with color types of the digital watermark image and the image into which the watermark image is embedded (Column 13, Lines 7-23, wherein digital watermark or additional information image 105 of figure 20 is color difference modulated for each of the R and G and B components being the color types of the additional information image as discussed in more details in Column 7, lines 17-22, and the RGB color types of the image to be watermarked 102 is also subjected to discoloration by changing RGB values to (127, 127, 127) before superposition step S304);

Yamaguchi teaches limitation of claim 8, in case that the digital watermark image is black and white, and the image into which the watermark is embedded is black and white, the method is as is (Column 6, Lines 25-29, where black and white image is within the limits of the 8 bits of data for each of the RGB types, and column 7, Lines 17-45 teaches a black and white watermark information image within the -255 to 255 range as well);

Yamaguchi teaches limitation of claim 11, in case that the digital watermark image is color, and the image into which the watermark is embedded is color, both the digital watermark image and the image into which the watermark is embedded are converted into a RGB form, respectively, and the R, G, and B components of the digital watermark are embedded into the R, G, and B components of the image into which the watermark is embedded, respectively (Column 13, Lines 16-23, where superposition step is based on the equations 4-1, 4-2 and 4-3 which the watermark in RGB format is embedded in the RGB format of the image).

#### ***Allowable Subject Matter***

4. Claims 2, 5 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record specifically Manjunath et al. does not teach step of repeatedly extending the digital watermark until the digital watermark image is larger than the image into which the watermark is

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embedded and adjusting the extended watermark image to the same size of the image to be embedded by cutting off portions of the digital watermark image that exceed the size of the image into which the watermark is embedded of claim 2, adding the watermark at different rates in three different regions composed of an edge region, homogeneous region and texture region of the image in consideration of the human visual system model of claim 5 and embedding the Y component a color digital watermark image in YUV form into a black and white image of claim 10, combined with other features and elements of the claims.

***Other prior art cited***

5. Prior art of record cited and not relied upon is considered pertinent to applicant's disclosure.

The US Patent 5,875,249; US Patent 6,268,866; US Patent 6,731,409; US Patent Application 20040103293 and US Patent 6,819,774 variously teaching image extension and color image watermarking related to applicant's invention as claimed.

***Contact information***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (703) 306-5916. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

**Any response to this action should be mailed to:**

Assistant Commissioner for Patents  
Washington, DC 20231

**Or faxed to:**

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**(703) 872-9306** for *formal* communications, please mark "**EXPEDITED PROCEDURE**"

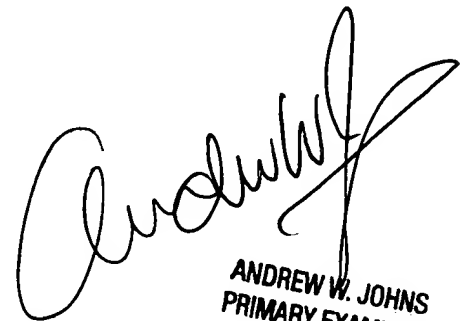
or:

for *informal* or *draft* communications; please label "**PROPOSED**" or "**DRAFT**".

**Hand delivered responses** should be brought to Crystal Park 2, 2121 Crystal drive, Arlington, VA, sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2700 customer service office **(703) 306-0377**.

Shervin Nakhjavan 3.N  
Patent Examiner  
Group Art Unit 2621  
January 5, 2001.



ANDREW W. JOHNS  
PRIMARY EXAMINER